REMARKS

Claims 1-8, 16, 17, 20, and 23 are pending in this application.

Applicant has amended claim 20. The changes to this claim made herein do not introduce any new matter.

<u>Rejection under 35 U.S.C. § 103</u>

Applicant respectfully requests reconsideration of the rejection of claims 1-8, 16, 17, 20, and 23 under 35 U.S.C. § 103(a) as being unpatentable over *Shimizu et al.* ("*Shimizu*") (US 2003/0112293 A1) in view of *Otsuki* (US 6,652,067 B2) and *Shimada et al.* ("*Shimada*") (US 6,293,643 B1). As will be explained in more detail below, the combination of *Shimizu* in view of *Otsuki* and *Shimada* would not have rendered the claimed subject matter obvious to one having ordinary skill in the art.

The claimed subject matter relates to a technique for carrying out high-speed half-toning. As defined in independent claim 1, the image output control system includes an image processing device and an image output device. The image processing device creates pixel groups, each of which has multiple pixels, and outputs the number of dots to be created in each pixel group. The image output device that receives the dot number data from the image processing device carries out the following tasks:

1) specifying a priority order (an order of dot forming) of individual pixels in each pixel group for dot creation;

2) determining positions of dot-on pixels in the pixel group with respect to each type of dot, based on the dot number data of the pixel group with respect to each type of dot and the specified priority order; and

3) creating multiple different types of dots at the determined positions of the dot-on pixels.

The claimed configuration specifies a priority order of individual pixels for dot creation in each group, with respect to each pixel group. In particular, a local dither matrix (see Figure 12(b)), which corresponds to a pixel group, is clipped out of a wide-area dither matrix (see Figure 8). The priority order is determined based on this local dither matrix (see Figures 13 and 14). Thus, even if pixel groups of the same tone value are arranged, the priority order for dot creation differs from pixel group to pixel group. The dots to be created, therefore, do not result in the same pattern, unlike the case of using a wide-area dither matrix, and the resultant image quality does not deteriorate as is the case of with the density pattern method (the density pattern method replaces a group of pixels of the same density (tone) with the same dot pattern, and this dramatically deteriorates the image quality).

To summarize, the claimed subject matter includes the feature of specifying a priority order of individual pixels for dot creation on a group to group basis. If an original dither matrix is divided into pieces to be used for respective pixel groups as in the claimed subject matter, rather than using the original dither matrix as it is (see Figure 8), the volume of required data can be decreased, which in turn reduces the time for data transmission. This advantageous effect is obtained because the claimed configuration stores "a priority order of individual pixels in a pixel group for dot creation" rather than the value of a dither matrix itself. One can readily understand that a small memory capacity is sufficient for storing the priority order shown in Figure 14(a) rather than the data shown in Figure 13(a).

In formulating the obviousness rejection, as discussed in Applicant's response to the first Office Action, the Examiner acknowledges that the *Shimizu* reference does not disclose or suggest, among other features, the feature of specifying an order of individual pixels in a pixel group including multiple pixels for dot creation and forming dots. Neither the *Shimada* reference nor the *Otsuki* reference discloses (or suggests) the concept of specifying an order of individual pixels in a pixel group including multiple pixels for dot creation and forming dots.

dots. In this regard, Applicant notes that the assignee of both the *Shimada* and *Otsuki*

references is Seiko Epson Corporation, which is the assignee of the subject application. The

claimed subject matter is directed toward a technique for carrying out high-resolution half-

toning at high speed that, for at least the above-discussed reasons, is significantly different

from the techniques shown in the *Shimada* and *Otsuki* references.

As explained above, and as explained in Applicant's response to the first Office Action,

the concept of specifying an order of individual pixels in a pixel group including multiple

pixels for dot creation and forming dots is neither disclosed nor suggested in any of the

Shimizu, *Shimada*, and *Otsuki* references. Thus, for at least this reason, the combination of

Shimizu in view of *Shimada* and *Otsuki* would not have resulted in a system having each and

every feature specified in claim 1. As such, the combination of *Shimizu* in view of *Shimada*

and *Otsuki* fails to raise a *prima facie* case of obviousness against the subject matter defined in

claim 1.

Independent claim 16 defines an image output control method that includes method

operations that correspond to the functionality of the image output device defined in claim 1.

As such, the arguments set forth above regarding claim 1 also apply to claim 16.

Independent claim 20, as amended herein, defines a computer program product

including a computer-readable storage medium having an image output control program stored

thereon. The image output control program includes program code for carrying out the

functionality of the image output device defined in claim 1. As such, the arguments set forth

above regarding claim 1 also apply to claim 20.

Independent claim 23 defines an image output control system. The system of claim 23

is similar to the system of claim 1, but is defined using slightly different claim language. For

example, in claim 23, the image output device is defined without reference to "modules" (e.g.,

the "priority order specification module" of claim 1 is defined as a "priority order operator" in

operator" in claim 23). As such, the arguments set forth above regarding claim 1 also apply to

claim 23.

Accordingly, independent claims 1, 16, 20, and 23, as presented herein, are patentable

under 35 U.S.C. § 103(a) over the combination of *Shimizu* in view of *Shimada* and *Otsuki*.

Claims 2-8, each of which ultimately depends from claim 1, and claim 17, which depends from

claim 16, are likewise patentable under 35 U.S.C. § 103(a) over the combination of *Shimizu* in

view of *Shimada* and *Otsuki* for at least the same reasons set forth above regarding the

applicable independent claim.

<u>Conclusion</u>

In view of the foregoing, Applicant respectfully requests reconsideration and

reexamination of claims 1-8, 16, 17, 20, and 23, as presented herein, and submits that these

claims are in condition for allowance. Accordingly, a notice of allowance is respectfully

requested. In the event a telephone conversation would expedite the prosecution of this

application, the Examiner may reach the undersigned at **(408) 749-6902**. If any additional fees

are due in connection with the filing of this paper, then the Commissioner is authorized to

charge such fees to Deposit Account No. 50-0805 (Order No. <u>MIPFP083</u>).

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Respectfully submitted,
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